

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): An electron gun comprising:

an electron emission cathode[[,]];

a control electrode; and

an extractor,

wherein the electron emission cathode is made of rare earth hexaboride and a tip of the electron emission cathode is located between the control electrode and the extractor, and wherein an electron emission surface of the electron emission cathode is spherical.

Claim 2 (Canceled).

Claim 3 (Currently Amended): The electron gun according to Claim [[2]]1, wherein [[the]] an apex angle of the tip portion of the electron emission cathode is 50 – 100°.

Claim 4 (Original): The electron gun according to Claim 3, wherein the rare earth hexaboride is lanthanum hexaboride.

Claim 5 (Currently Amended): ~~The electron gun according to Claim 1,~~ An electron gun comprising:

an electron emission cathode;

a control electrode; and

an extractor,

wherein the electron emission cathode is made of rare earth hexaboride and a tip of the electron emission cathode is located between the control electrode and the extractor, and

wherein an electron emission surface of the electron emission cathode is flat.

Claim 6 (Currently Amended): The electron gun according to Claim 5, wherein ~~the apex angle of the tip portion of the electron emission cathode is 50—100°C~~ a diameter of the flat electron emission surface is 5-200 μm .

Claim 7 (Original): The electron gun according to Claim 6, wherein the electron emission cathode is made of a single crystal of rare earth hexaboride and the electron emission surface of the electron emission cathode has a $\langle 100 \rangle$ face.

Claim 8 (Original): The electron gun according to Claim 7, wherein the rare earth hexaboride is lanthanum hexaboride.

Claim 9 (Original): The electron gun according to Claim 1, wherein the electron emission cathode is located between two heaters made of carbon so that the electron emission cathode is heated by feeding an electric current to the electron emission cathode and the heaters.

Claim 10 (Original): The electron gun according to Claim 9, wherein the carbon used for the heaters is pyrolytic carbon.

Claim 11 (Original): The electron gun according to Claim 1, wherein an angular intensity of 0.2 – 70 mA/sr is provided in the application of a driving voltage of 1 kV.

Claim 12-14 (Canceled).